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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/469,070 | 12/21/1999 | HANNA E. WITZGALL | TI-23879 | 4488 |

23494 7590 10/21/2003

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| EXAMINER |
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ABDULSELAM, ABBAS I

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| ART UNIT | PAPER NUMBER |
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2674

DATE MAILED: 10/21/2003

16

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/469,070

Applicant(s)

WITZGALL, HANNA E.

Examiner

Abbas I Abdulsalam

Art Unit

2674

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Art Unit: 2674

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-13 rejected under 35 U.S.C. 103(a) as being unpatentable over Nakayama et al. (USPN 6309073) in view of Simon et al. (USPN 5451980).

In regard to claims 1, 7, 10 and 11, Referring Fig. 1, Nakayama teaches a projection type display apparatus (1) including a light source (2), a color separating optical system (4) for separating a white beam (w) into color beams Red, blue and green (R, G, B), three liquid crystal panels 5R, 5G and 5B as light valves for modulating the color beams, a color synthesizing optical system (6) for synthesizing the modulated color beams, and a projection lens (7) for magnifying and projecting the synthesized beam on to the screen (8). See col. 6, lines 18-34. Nakayama does not specifically teach the use of a spatial light modulator and a controller. ,Nakayama on the other hand teaches "switching control operations", which are performed according to the image information by certain drive means in the liquid crystal panels (5R, 5G, 5B) thereby modulating the color beams that pass through. See col. 7, lines 9-15.

Art Unit: 2674

Therefore, it would have been obvious to one having skill in the art at the time the invention was made to utilize Nakayama's light valves (5R, 5G 5B) and switching control operations for the purpose of modulating the color beams, and controlling the modulations respectively. One would have been motivated in view of Nakayama that the use light valves and switching control operations equivalently provide the desired spatial light modulations, and controlling to selectively modulate the light respectively.

Nakayama does not disclose "a color modulator comprised of a stack of at least two dielectric layers and at least three transparent electrodes, wherein a voltage applied to the electrodes limits the wavelengths of light permitted to continue on the light path". Simon on the other hand teaches a color modulator (32) connected to transparent column electrodes (20), and the color modulator being used for supplying voltage signals through the layer of liquid crystal for changing the dielectric constant of the liquid crystal. See Fig. 2, column 5, lines 24-32. Furthermore, Simon discloses that by changing the dielectric constant, excitation of different wavelength can be achieved. See column 12, lines 51-62.

Therefore, it would have been obvious to one having skill in the art at the time the invention was made to modify Nakayama's projection type display system to adapt Simon's color modulator (32) as shown in Fig. 2. One would have been motivated in view of the suggestion in Simon that the color modulator along with column electrodes (20) as configured in Fig. 2 can be equivalently used to meet the desired color modulator with three transparent electrodes. The use of color modulator helps function a color display system as taught by Simon.

Art Unit: 2674

Moreover, It would have been obvious to utilize Simon's technique of changing the dielectric constant, which results in excitation of different wavelength for the purpose of satisfying the desired limitation of wavelength on the light path.

Regarding claims 7, 10 and 11, in addition to what has been discussed above, Simon teaches a color display modulator (10), which utilizes a color selective scattering of white light by surface plasmons to produce a color display. See column. 5, lines 62-63. Further, Simon discloses a liquid crystal layer (18) providing variable dielectric layer, and adjacent to the liquid crystal layer is a column array transparent electrodes (20). See column 16, lines 5-20 and Fig. 1. Simon also teaches that when a voltage is applied across the liquid crystal layer (18), the surface plasmon condition will be changed to another color in the spectrum, and an increase in the voltage change the color into a different one. See col. 7, lines 43-48.

Regarding claim 2, Nakayama teaches the color synthesizing optical system (6) consisting of dichroic prism. As shown in Fig. 1, the light valves (5R, 5G, 5B) are located between an illumination optical system (2A) and projection lens (7). See col. 7, lines 49-55.

Regarding claim 3, Nakayama teaches a color synthesizing optical system (6) that is of a mirror composite having dichroic mirrors arranged in "X" shape. See col. 7, lines 49-55.

Regarding claim 4, Simon teaches the configuration in Fig. 3, where intensity modulation in conjunction with color scattering occurs with respect to the interface (17), which is associated

Art Unit: 2674

with fabrication of the liquid crystal layer (18) on the metal layer. See col. 9, lines 1-6 and col. 11, lines 19-32.

Regarding claim 5, Nakayama teaches projection type display system which includes the use of concave mirror (923) as shown in Fig. 15A.

Regarding claim 6, Nakayama discloses three liquid crystal panels (5R, 5G and 5B) functioning as light valves. See col.6, line 20-34.

Regarding claims 8 and 12, Simon teaches the dielectric material with respect to metal liquid crystal interface. See col. 4, lines 21-35.

Regarding claims 9 and 13, Simon discloses side of electrode 20-glass panel whose order structure is achieved by placing on the ITO glass substrate (22). See col. 6, lines 20-28 and Fig. 1.

Conclusion

2. The prior art made of record and not relied upon is considered to applicant's disclosure.

The following arts are cited for further reference.

U.S. Pat. No. 6,342,960 to McCullough

U.S. Pat. No. 6,330,039 to Matsui et al.

Art Unit: 2674

3. Any inquiry concerning this communication or earlier communication from the examiner should be directed to **Abbas Abdulsalam** whose telephone number is **(703) 305-8591**. The examiner can normally be reached on Monday through Friday (9:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Richard Hjerpe**, can be reached at **(703) 305-4709**.

Any response to this action should be mailed to:

Commissioner of patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314

Hand delivered responses should be brought to Crystal Park II, Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology center 2600 customer Service office whose telephone number is (703) 306-0377.

Abbas Abdulsalam

Examiner

Art Unit 2674

October 2, 2003



RICHARD HJERPE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600